



## **When servitization is not transforming the way we do business - analysis of two unsuccessful service offerings from the shipping industry**

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# WHEN SERVITIZATION IS NOT TRANSFORMING THE WAY WE DO BUSINESS - ANALYSIS OF TWO UNSUCCESSFUL SERVICE OFFERINGS FROM THE SHIPPING INDUSTRY

Aris Pagoropoulos, Louise Laumann Kjaer & Tim C. McAloone

## ABSTRACT

**Purpose:** Although servitization as a transformation process is recognized as a source of competitive advantage for both manufacturers and their customers, it has also suffered from limited success, dissatisfactory returns and slow adoption rates. The majority of the studies in literature are primarily focused on conceptualizing servitization and recognizing drivers and barriers towards successful implementation from the manufacturer point of view. Far less attention has been given to the customer organisation and to negative results, where manufacturer's servitization attempts have failed to transform the perception of the customer.

**Design/Methodology/Approach:** Based on the hypothesis that unsuccessful attempts to servitize would share common characteristics and flaws, a longitudinal observational study was conducted from the customer's point of view. The main research subject was a shipping company in the role of the customer that in the course of two years turned down two different servitized offerings from two manufacturers: one pooling and servicing agreement and one performance agreement.

**Findings:** The customer disregarded the servitized offerings because they were not perceived as important sources of value. Based on the two cases, two motifs emerged. The first was the lack of synergy between customer and supplier capabilities and focus, since the manufacturers' service offerings were either indirectly competing or not complementing the customer's internal resources. Together with the higher initial cost of the offerings, the customer company essentially challenged the necessity and efficiency of the transformation. The second was the manufacturer's inability to deliver to the customer's expectations. Even in cases where the customer was able to communicate its own needs and requirements, the manufacturer's service organization was unable to match them with the proposed offerings.

**Originality/Value:** The results suggest that manufacturers should aim for better integration of their offerings within the customers' business environment, in order to help transform customers into proactive buyers of service offerings.

**KEYWORDS:** negative results, shipping, servitization adoption, Product/Service-Systems.

## 1. INTRODUCTION

Servitization has attracted considerable attention from both academia and industry. By adding services to products and delivering so-called 'servitized offerings' instead of stand-alone products, servitization can lead to new profit centres (Vandermerwe 1990), higher revenues and better profit margins (Gebauer et al. 2005; Neely 2009; Martinez et al. 2010). Servitization is described as a core element in the future of manufacturing (Foresight 2013), as adding services to the product portfolio is likely to bring benefits to the organisation (Bustinza et al. 2013).

At the same time, servitization is not without challenges. Gebauer et al. (2005) have coined the term the 'service paradox', which describes companies that invest in extending their service business, without the expected higher returns. Other researchers (Suarez et al. 2013; Neely 2009) challenge the potential of services, arguing that creating a service-focused firm might not be a viable option for all companies.

Although servitization is no stranger to constructive criticism, unsuccessful attempts to servitize have not attracted enough attention. For science in general, the fact that negative results are often disregarded is a pervasive problem (Matosin et al. 2014), which effectively skews the scientific literature by only including chosen pieces of information (Granqvist 2015). Some research fields have long recognized the repercussions, and scientific journals that focus only on negative results are being launched (e.g. Journal of Negative Results in BioMedicine 2016). In servitization, the majority of existing studies have sought to conceptualise and contextualise servitization adoption and tend to rely on data from two to three organisations that are recognised practice leaders (Baines & Shi 2015). We believe that this approach is by definition selective and can potentially ignore valuable insights. It is only natural that almost 30 years after establishing the potential of services (Vandermerwe & Rada 1988), a handful of manufacturers eventually overcome challenges and barriers and are in the position to deliver value to their customers. Nevertheless they often experience large difficulties in convincing their customers that servitized offerings can positively transform their business – a fact reflected by the limited diffusion of servitization offerings (Tukker 2015).

This study analyses two such cases, in an effort to understand ‘what went wrong’. Towards that end, we believe that evaluating the customer perspective is of paramount importance in explaining such paradoxical results. Service logic dictates that the locus of value creation moves from the producer to a collaborative process of co-creation between parties (Vargo & Lusch 2008). At the same time, empirical research suggests different perspectives for manufacturers and customers (Tuli et al. 2007), indicating that both need to be taken into account, in order to provide an accurate description of servitization as a phenomenon.

Based on the hypothesis that unsuccessful attempts to servitize would share common characteristics and flaws, we try to follow up and identify patterns behind the negative decisions that will hopefully create awareness around potential issues, and in the end drive customer acceptance of servitized offerings.

## **2. RESEARCH METHODOLOGY**

The focus of this study is on one industry – the shipping industry. Despite the organisational, structural and cultural issues that stand in the way, the shipping industry is attractive for Product/Service-Systems (Andersen et al. 2013), largely due to fact that ships are long-life products that require through-life support (Voss 2005; Johnson & Mena 2008).

This study was observational in nature, evaluating cases where service organisations communicated an advanced servitized offering to the customer. The offerings under study influence key performance attributes which drive firm competitiveness, namely cost efficiency and asset reliability. The oligopolistic market conditions in the shipping world and the requirements for global presence and quick response times (Pagoropoulos et al. 2014) necessarily exclude small manufacturing firms and second tier suppliers from delivering advanced service offerings, and implicate established manufacturers with extensive service networks and strong presence throughout the life cycle of the product – from design & manufacture, to maintenance and retrofit. Also, due to their strong presence, established manufacturers have the necessary communication channels to the customer organisation thus allowing relationship-based interaction. Such organisations are more likely to have come far in their efforts to increase growth through the increased sale of services and succeeded in moving from a transaction based- to relationship-based customer interaction -what Martinez et al.(2010) refer to as ‘servitization journey’. They are also likely to view Product/Service-Systems as a way to achieve differentiation through the integration of product and services that provide value in use to the customer (Baines et al. 2007). Focus on mature providers can also be seen as a limitation, since it introduces a certain degree of bias during data collection. But while the choice might seem biased and exclusive, it is unlikely that

other types of manufacturing organisations –such as second tier suppliers- would be in a position to offer viable servitized solutions, given the characteristics of the shipping industry.

The customer company is one of the major players in its particular segment, offering an integrated platform that handles both commercial and technical management of approximately 80 tanker vessels. Moreover, the company's adequate size allows economies of scale. It is characterized by performance driven attitude with particular focus on quality, safety and cost efficiency. The main limitation in regards to this study was the single company perspective due to confidentiality reasons, which was heavily compensated by privileged access to data and people. Moreover, while the juxtaposition of the two cases within the case company, having different success criteria within the same business environment is likely to produce useful theoretical constructs, the limited number of considered perspectives are likely to result in some mental overfitting – at least to some degree (Eisenhardt & Graebner 2007). Therefore, while this case study can be used to generate hypotheses, a fair generalisation of the findings has not been considered (Flyvberg 2006). Finally, it should be noted that within servitization and associated research fields, empirical findings from specific cases are difficult to generalize. Rexfelt & Ornäs (2009) argue that this difficulty is due to the fact that both customers and the products the offerings might replace are diverse; in addition, the solutions can be composed in an infinite number of ways.

Servitized offerings are provided through a collaborative network, involving stakeholders and departments from manufacturer, supply chain producers and the customer company (Mougaard et al. 2012). The process used to identify the particular stakeholders involved in the examined case studies, together with the data collection methods is shown in Figure 1. Both qualitative and quantitative data were employed. While both manufacturer and customer perspectives were present, the customer perspective was the most dominant.

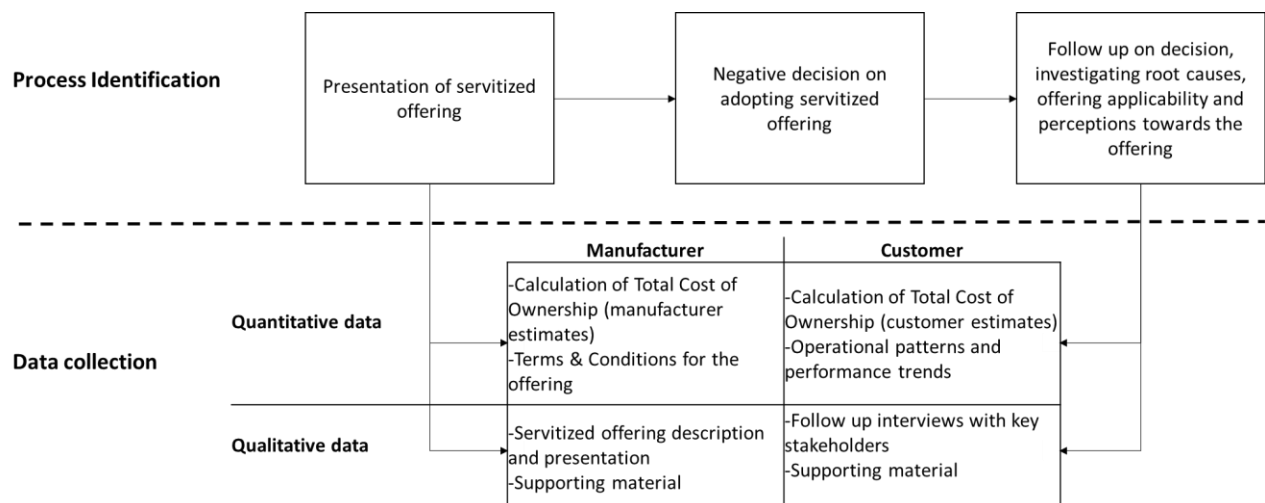


Figure 1: Process identification and data collection

In terms of quantitative data, terms & conditions of the servitized offering were evaluated against the actual performance trends & operational patterns to assess the attractiveness and applicability of the offerings. Qualitative data were collected, in order to compare the 'modus operandi' of the offering to the root causes and key drivers of value, as perceived by the customer and are not covered by the offering. From the customer perspective, semi-structured interviews from key decision makers were the main sources of qualitative data. Key decision makers included both middle level managers with fair technical expertise, as well as experienced officers with strong technical background.

### **3. CASE DESCRIPTION**

#### **3.1 Pooling and Servicing Agreement**

A pooling and servicing agreement for turbochargers was the first advanced offering that was turned down by the customer. Turbochargers on marine two-stroke engines were first installed on a ship in 1952 (Woodyard 2009) and have since become standard on both two-stroke engines used for propulsion and on four-stroke engines used for electricity generation on board. Their main advantages are the delivery of increased power for a given size and weight of engine; significant reduction of specific fuel consumption; lower specific engine cost (price/power); lower heat and friction losses for a given power output; and lower specific exhaust emissions (Larsen et al. 2014).

The servitized offering under study was a pooling agreement for the turbochargers on the main and auxiliary engines on board vessels, under which a reconditioned turbocharger was offered. Moreover a design modification was offered to the existing turbocharger units, in order to increase their reliability. As part of the agreement, warranty was offered for the first 6 months, on the condition that certain stipulations were met. For the pooling and servicing agreement, reliability, cost and risk mitigation were the important elements of the value proposition under offer. Especially for vessels over 15 years old, relatively old turbocharger designs can represent a large part of OPEX, due to more often and more severe breakdowns.

#### **3.2 Performance Agreement**

The second servitized offering under study was a performance agreement that guaranteed the fuel efficiency of the hull coating system throughout the life cycle of the paint. The background for this performance agreement was that for modern merchant vessels, fuel costs for the purpose of propulsion is a major cost driver (Stopford p. 602). Especially for bulk carriers and tankers that sail slow, where frictional resistance represents a considerable part of the ship's resistance (MAN Diesel & Turbo 2011), a hydrodynamic hull translates to decreased fuel costs and, in the case of strong market conditions, increased trading opportunities due to the fact that the vessel can sail at higher speeds. The hull coating has a high impact on the fuel consumption of ships (MAN Diesel & Turbo 2011), and for existing vessels the hull coating system is the characteristic that can influence their efficiency, as ship geometry and propulsion are rarely subject to change after a ship has been built (Lindholdt et al. 2015)

Under the terms of the performance agreement under study, the manufacturer should monitor the fuel penalty throughout the five-year life cycle of the coating system. In the instance that the fuel penalty would exceed the expected threshold, a money-back-performance-warranty was offered, promising to reimburse the customer for a significant fraction of the cost. This warranty was subject to terms and conditions, which in turn depended on the operational profile of the vessel. For the performance agreement offering, the most important elements of its value proposition were cost savings and risk mitigation. Long term deterrence is arguably the most important feature in regards to drag performance of an hull coating system (Munk et al. 2009), thus guaranteeing the five-year life cycle of the hull coating system has important implications.

### **4. RESULTS**

As discussed earlier, neither of the two above service offerings were adopted by the customer company. From a number of follow-up interviews within the customer company, two main motifs emerged that explained the negative outcomes: the lack of synergy between customer and manufacturer capabilities; and an inability to deliver to the customer's expectations. Table 1 gives examples of examples of quotes within motifs, as identified for each of the case studies.

Table 1: Examples of quotes within motifs, as identified for each of the case studies

	Lack of synergy between customer and manufacturer focus and capabilities	Inability to deliver to the customer's expectations
Pooling and servicing agreement	"The issue was different. We have seen several breakdowns especially for turbochargers by <<Manufacturer>> (...) the root cause can be traced to poor Lube Oil quality as a result of poor purification routines"	"<<Manufacturer>> was offering 6 month warranty on failures that was due to their work, which was not enough"  "Everything is good until we agree, but then the account disappears, and is being handled by some local office"
Performance agreement	"We are already doing that, so do we think we can gain from it?"  "It could be a nice second option"	"The problem is the trade"  "We have vessels waiting 3 months in West Africa, the guarantee is not for us"

#### 4.1 Lack of Synergy Between Customer and Manufacturer Focus and Capabilities

In regards to the pooling and servicing agreement, the focus within the customer organisation was to reduce the amount and frequency of turbocharger breakdowns. The pooling and servicing agreement provided a solution that could assist in timely overhaul of turbochargers at the end of the expected running hours, while also guaranteeing an adequate supply of spares on board, in case of an unexpected breakdown. Furthermore, the design modification would increase reliability.

The main reason it was not pursued was the fact that it was an intermediate solution to the actual root cause. During the negotiation process the customer organization identified low lube oil quality as the main reason for breakdowns. This resulted in a change of focus from outsourcing activities to a third party, to establishing Standard Operating Procedures (SOPs) internally. This setup would resolve the issues at the lowest possible cost. Moreover, it would have positive rebound effects, e.g. by reducing the created amount of sludge. The proposed offering, despite its potential for value creation, was not adopted in the end. It was recognized that the scope of the pooling and servicing agreement was not actually solving the problem, and at the same time the design modification would come at an increased cost. As a result, the offering was seen as an optimization package that would come at a higher cost.

In regards to the performance agreement, monitoring the performance of the coating system is a critical function, as it supports business decisions in regards to the operation of the vessels. However, this was already being done in-house in the customer company. Although the manufacturer's monitoring service was more mature and sophisticated, it was seen as a secondary option, where the in house performance estimates would be benchmarked against the third party estimates. It was perceived to be similar to an insurance policy, which would come at a higher price. The proposed offering, despite its potential for value creation, was again not adopted. Its function was seen as redundant, as it would incur additional costs when compared to the stand-alone product alternative.

#### 4.2 Inability to Deliver on the Customer's Expectations

An important element of the value proposition for both offerings is their ability to distribute risks and responsibilities from the customer to the manufacturer. Risk sharing and mitigation is important element for servitized offerings (Tukker 2015; Johnson & Mena 2008; Baines & Shi 2015). However, and despite their intention, neither of the described offerings actually led to risk mitigation for the customer; in that regard they actually fell short of expectations. The warranty terms were either not comprehensive enough or not applicable at all, as they did not fit the behavioural and operational practices of the vessels.

For example, the manufacturer in the pooling and servicing agreement offers a 6 month warranty, which covers any parts damaged due to an internal root cause related to the service work performed – an offer that was not perceived as adequate. As discussed before, the root cause was poor lube oil quality – and failures due to lube oil quality are explicitly excluded from warranty. Figure 2 shows the percentage of the vessels not eligible for the warranty on the grounds of lube oil quality.

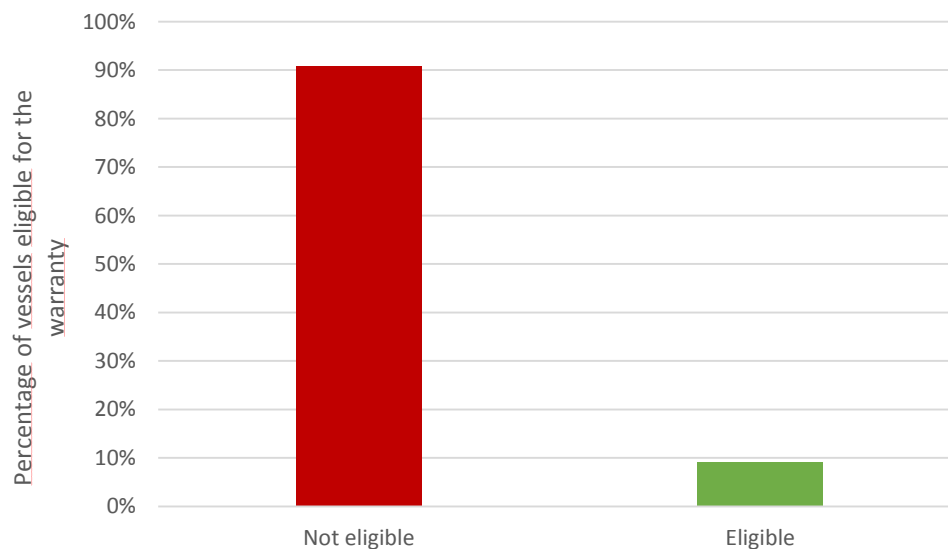


Figure 2: Percentage of vessels eligible under the warranty terms for the pooling and servicing agreement

Another important characteristic that the pooling and servicing agreement was short of was transparency. As costs depended on the required level of service on the old turbochargers, it was important for the customer company to be able to follow and – if necessary – challenge the process. But the existence of a global network meant that the process was outsourced to the various offices around the world, with multiple potential points of contact. So from the customer perspective the turbocharger units would effectively ‘disappear’ in the network.

For the performance agreement the money-back warranty depended on the sailing profile of the vessel. For the warranty to apply the vessel had to sail above a certain speed for a significant percentage of the time within any given window of approximately two months. So within the five-year lifetime of the paint, if a vessel had just one long waiting period, it could void the money-back warranty. From the customer perspective the window were deemed to be too stringent. The boxplot in Figure 3 shows the maximum waiting times as a percentage of the size of the window for the total vessel group. Maximum waiting times were assessed for a sampling period of two years. Notice that they are heavily skewed, as some vessels might remain idle for longer than three months, thus deeming less than 10% of the vessels eligible for warranty.

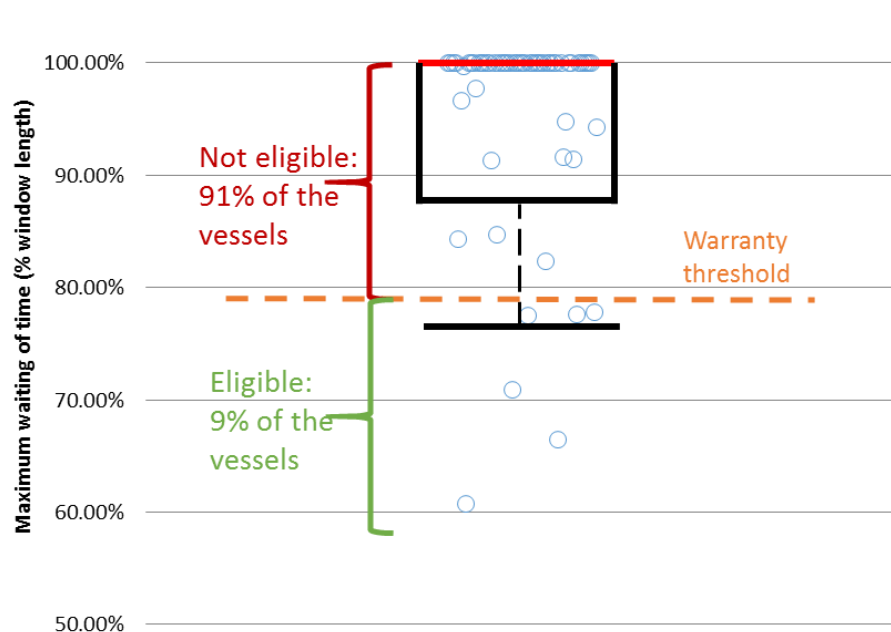


Figure 3: Boxplot showing the maximum waiting times throughout the fleet. Notice that for the warranty to apply, waiting times must be below the warranty threshold (orange line)

The prime reason for the long waiting times is the type of trade. The customer company operated in the tramp shipping business, meaning that the vessels operated without a fixed schedule, carrying available cargoes between any two ports. Their schedules were dictated by economics of supply and demand (Stopford 2009; Lun et al. 2010) and could result in either short voyages with frequent port stays, or very long port stays - especially when calling ports in West Africa.

## 5. DISCUSSION AND CONCLUSION

The study's aim was to identify patterns and common characteristics for two servitized offerings that were not adopted by one customer company. Two main motifs were identified from the customer perspective: the manufacturers lack of synergy and focus; and their inability to deliver on customer's requirements. The investigation showed that the proposed offerings exhibit practical limitations that challenge their value proposition, and restrict their adoption.

Given the nature and the limitations of this study, we can only make hypotheses on why the servitized offerings under study were unsuccessful. Both offerings put forward a promising concept that, despite its limitations, can be a source for competitive advantage for the customer. Rather than dismissing the offerings altogether, the customer company could refine them and attempt to integrate them in daily operations. In this study, we evaluated offerings predominantly from the customer side, a decision that also bears potential drawbacks. For customers to successfully servitize, they also need capabilities such as the existence of contracting skills, management information, process compliance and flexible budgeting systems (Baines & Shi 2015) that will allow them to make the most out of the offerings. Therefore, if they are not present, they could act as confounding variables, and their influence would not become apparent within the chosen research setup.

We believe that this might be the case at hand. Although the customer readiness towards servitized offerings was outside scope of the current study, it should not be overlooked. The fact that a relational process did not occur, and the offerings were rather dismissed as unattractive business cases might be



an interesting finding, as it could point to lack of competencies from the customer side. Future work is needed to put this hypothesis to test.

The limited insight on the manufacturers' perspective prohibits us from examining the cases in greater depth. However, and despite this limitation, the study shows the importance of explicitly considering the customer perspective. The relational process view of solutions, such as the ones considered in this study, postulate that the effectiveness of a solution depends on both customer and supplier variables, and is apparent when evaluating servitized offerings from the perspective of the customer (Tuli et al. 2007). Moreover, as already discussed in servitization literature, the solution development process has to be driven by customer insight and focus on customers' processes and financial drivers, not only on technological innovations (Storbacka 2011). Manufacturers could also assist this process through the development of modular services (Løkkegaard et al. 2016) that make it easier for their customers to source manufacturer competencies and capabilities in a flexible manner, and create synergies.

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